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KNOWLEDGE, ATTITUDE AND PRACTICES ON TUBERCULOSIS PREVENTION AND CONTROL AMONG RESIDENTS OF A BARANGAY IN DAVAO CITY

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Abstract

Introduction: *Tuberculosis (TB), mainly affects the lungs, was common in eight countries, including the Philippines, and is treatable yet still exists and contagious. It is one of the foremost causes of death globally.*

Objectives: *This study wanted to ascertain the respondents' knowledge, attitudes, and practices about TB prevention and control.*

Methods: *Descriptive-comparative design was utilized in this study conducted among residents (n=387) of a barangay in Davao City randomly selected following the criteria: 18 years old and above, not being diagnosed with TB, residing for at least six months in that barangay, regardless of sex, ethnicity, and religion, and willing to participate in the study. After the ethical approval was secured, a four-part questionnaire was used to gather data. Data analysis was done using the SPSSv.29.*

Results: *were females aged 26-35, college level, who stayed in the barangay for >40 years with a monthly income of below Php 10,000.00. Many of them have high knowledge, positive (high) attitudes (M=3.63), and good practices (M=3.60) on TB infection prevention and control. A statistically significant difference was noted between knowledge and age ($p<0.001$) and years of residence ($p<0.001$). Meanwhile, attitudes towards TB*

have statistically significant difference when grouped according to their age (p<0.01) and years of residence (p<0.01). Moreover, age and treatment practices (p0.00), prevention practices (p0.014), sex and treatment practices (p0.047), and years of residency and treatment practices (p<0.01) and prevention practices (p0.040) showed to have statistically significant differences.

Conclusions: *These findings suggest that younger and middle-aged adults are more knowledgeable and have good attitudes and practices about TB prevention and control compared to older adults. Moreover, as the number of years of residency increases, knowledge, attitude, and practices decline. Educational and intervention initiatives was designed to close knowledge gaps and directly tackle certain demographic issues in TB preventive and treatment protocols. To further enhance the management of TB and guarantee that varied population groups experience positive health results, specific measures can be employed.*

Keywords – *Health, KAP, TB Disease, Treatment, Prevention and Control, Comparative Study, Davao City, Philippines*

INTRODUCTION

When an infected person coughs, sneezes, or speaks, tiny droplets containing bacteria are released into the air, causing tuberculosis, primarily affecting the lungs [20]. Due to close contact and increased exposure to respiratory secretions, tuberculosis is spread among people in crowded living environments, such as tiny homes and heavily populated urban regions. Since tuberculosis (TB) is a leading cause of illness and mortality globally, it presents a substantial public health problem [26]. Approximately 10.6 million people worldwide, including 1.6 million children, developed tuberculosis in 2021. It continues to be a severe public health issue that threatens health security despite being preventable and treatable [30]. However, a notable decline in TB cases and incidence rates was observed in the same year, probably caused by pandemic-related causes. TB cases and incidence rates then showed signs of recovery in 2021 but were still lower than in 2019. Incidence rates and reported TB cases rose for the second year in 2022, but they were still below the levels seen in 2019 before the COVID-19 pandemic [8].

Over 45% of all TB cases worldwide occur in the WHO South-East Asia Region, which is home to roughly 25% of the world's population. More than 4.8 million individuals in the region contracted TB in 2022, and more than 600,000 of them died—more than half of all TB deaths worldwide. 88% of new and recurrent TB cases were successfully treated. With an expected 170,000 cases in 2022, the region also accounts for 38% of all MDR-/RR-TB infections worldwide. This region contains six high-burden TB nations, with Nepal taking Thailand's place for MDR-/RR-TB [31]. Eight nations—Bangladesh, China, India, Indonesia, Nigeria, Pakistan, the Philippines, and South Africa—account for around half of all TB cases. 7.5 million people were diagnosed with tuberculosis in 2022, the most significant number since WHO started a worldwide TB monitoring program in 1995, according to statistics from 192 regions and countries [23].

In the Philippines, the nation ranks fourth in the world for the incidence of tuberculosis. An estimated one million Filipinos suffer from active tuberculosis, and every day, over 70 Filipinos lose their lives to this preventable illness [32]. A data was recorded pertaining to the Philippines wherein a total of 321,564 TB cases was registered in 2021, with an estimated 741,000 TB cases and 61,000 deaths from the infectious disease. According to data from 2022, the Philippines has 638 cases of tuberculosis per 100,000 persons [28]. In contrast, that year, Singapore had 51 TB cases per 100,000 residents [27]. Due to the growing number of cases, the Philippines provides free TB treatment in public hospitals, clinics, and health centers under the National Tuberculosis Control Program, however, with the exception of MDR-TB treatment utilizing the lengthy regimen and TB prevention in children, providing TB care in hospitals was typically more expensive than in primary

care settings [7]. This program is also in place in India, where certain private and non-profit healthcare facilities are authorized to offer these services (Ministry of Health & Family Welfare-Government of India, 2024). However, the BCG vaccine can provide protection against serious TB that spreads and affects the lungs, even while it may not completely prevent the disease (Philippine Tuberculosis Society Inc., 2022).

Inadequate information and comprehension of how tuberculosis spreads have been identified as a significant obstacle to early detection, treatment facilitation, and disease prevention. A thorough understanding of tuberculosis is crucial for disease prevention, early identification, and timely treatment-seeking behavior, all of which contribute to a decrease in the illness's incidence over time [3]. According to a 1991 survey, most participants knew enough about tuberculosis symptoms, communicability, prevention, and transmission. However, little was known about the microbe that causes tuberculosis. Although the attitude scale indicated a generally positive view of TB, the majority's answers to open-ended questions indicated that TB still carries a significant stigma [22].

Similarly, a study found that most participants knew about tuberculosis, which was contagious. Notably, they joined TB patient clubs and attended educational sessions at a health center, which broadened their understanding. Still, some people did not fully comprehend the illness [24]. A recent study [4] found that nearly two-thirds of the respondents had an appropriate attitude and practice toward tuberculosis, indicating "good" overall awareness of the disease. However, no discernible variations in attitude or practices were found when the respondents were assessed on their knowledge.

This research addresses these gaps by addressing the local gap among one of the areas in Davao City, offering a more comprehensive understanding of the knowledge, attitude and practices on TB disease, prevention and control among the residents. By doing so, it seeks to enlighten the development of more inclusive and effective support schemes within the community, tailored to the diverse needs of today’s population.

OBJECTIVES

The study aimed to explore the knowledge, attitude and practices on TB among the residents of a barangay in Davao City.

Specifically, this study aimed to:

1. determine the socio-demographic profile of the respondents,
2. determine the Knowledge on Tuberculosis Prevention and Control of the respondents,
3. determine the Attitude on Tuberculosis Prevention and Control of the respondents,
4. determine the Practices on Tuberculosis Prevention and Control of the respondents, and
5. determine if there is a significant difference in knowledge, attitude and practices when grouped according to the demographic profile.

METHODS

Research Design

This study employed a descriptive, comparative research approach to ascertain how respondents' knowledge, attitudes, and practices about TB prevention and control differed when categorized based on their socio demographic profile.

Participants

The study participants were selected from a barangay in Davao City, Philippines, based on specific eligibility criteria: they had to be at least eighteen years old, free from tuberculosis, have resided in the barangay for a minimum of six months, and consent to participate. A total of 387 residents were chosen using systematic random sampling, in which individuals were selected at regular intervals (k) to ensure a representative sample,

allowing conclusions to be drawn about the larger population (Thomas, 2020). An "A Priori" power analysis determined the minimum required sample size to be 305, with parameters set at a 5% significance level, a 25% effect size, and 95% power.

Instrumentation

A researcher-developed survey questionnaire, consisting of four sections, was employed to collect data. To ensure validity, the instrument underwent content validation through the Content Validity Index (CVI) assessed by a panel of four experts, while reliability was tested using the Kuder-Richardson Formula 20 (KR-20) and Cronbach's alpha. A pilot study involving 20 individuals with characteristics similar to the main study participants was conducted to test the questionnaire. Part 1 collected socio-demographic data. Part 2 was a 20-item questionnaire on TB treatment and prevention knowledge, scored as True or False, which demonstrated strong reliability with a KR-20 score of $\alpha = 0.95$. Part 3, assessing attitudes toward TB prevention and control, consisted of 10 items and showed a Cronbach's alpha reliability score of $\alpha = 0.87$. Part 4 evaluated practices regarding TB prevention and control through 20 items, achieving a reliability score of $\alpha = 0.84$. Attitude and practice sections used a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Data Collection

Data were collected using a paper-based survey questionnaire. Before data collection commenced, ethical clearance was obtained from the Research Ethics Committee (REC) of the University of the Immaculate Conception. Following this, permission to conduct the study in a barangay in Davao City was granted by the barangay captain. Informed consent was obtained from each participant prior to their involvement in the survey. All data collected were handled with strict confidentiality and anonymity, in compliance with the Data Privacy Act of 2012. After data collection was complete, the information was analyzed and interpreted.

Analysis

Date was analyzed using the frequency and percentages, mean and standard deviation, independent t-test and Analysis of Variance (ANOVA) using SPSS version 29.

Ethical Considerations

This study was duly approved by the University of the Immaculate Conception, Research Ethics Committee with ethical reference no. UG-0068-03-24 given last May 11, 2024. Furthermore, ethical standards were meticulously followed applied by the researchers.

RESULTS

Socio-demographic Profile

The study included a total sample of 387 respondents, whose socio-demographic characteristics are outlined in Table 1. The mean age of the respondents was 40.11 years (SD = 11.31), with age categories ranging from 19 to over 65 years. The majority of participants were within the 26-35 age group (36%), followed by the 36-45 group (28%), and the 46-55 group (17%). Younger adults aged 19-25 constituted a smaller portion of the sample (7%), while participants aged 56-65 and over 65 comprised 11% and 2% of the sample, respectively. In terms of gender distribution, there was a higher proportion of females (56%) compared to males (44%). Regarding educational attainment, a significant majority (71%) had some college-level education, with 27% completing a college degree. A small percentage had either high school-level education (1%) or had graduated from high school (1%), while 1% held a diploma qualification. Income levels among the respondents indicated that the majority (85%) earned below 10,000 units of currency per month, and only 13% fell within the 21,001 to 40,000 income brackets. Minimal representation was found in the 10,001 to 20,000 (1%) and 40,001 to 60,000 income ranges (1%), with no respondents reporting earnings above 60,000 units. The average years of residency in the

area were 26.47 years (SD = 14.54). Notably, 38% of respondents reported residing in the area for over 40 years, while 26% had lived there between 10.1 to 20 years, and 18% had been residents for 1 to 10 years. Only one individual reported residing in the area for less than one year. This demographic profile indicates a mature sample with significant local residency duration and low-income levels, which may influence their perspectives and experiences related to the research focus.

Level of Knowledge

The data on knowledge levels among respondents in table 2 indicates that the majority possess a moderate understanding of tuberculosis (TB). Specifically, 86.8% (n = 336) of participants fell into the "Moderately Knowledgeable" category, suggesting a general but incomplete awareness of TB and its related concepts. A smaller portion of respondents, 7.2% (n = 28), demonstrated a high level of knowledge, indicating a thorough understanding of the disease. Meanwhile, 5.9% (n = 23) of respondents had a low level of TB knowledge, highlighting a minority who may require targeted educational interventions to improve understanding. These findings suggest a relatively well-informed population overall, with a cumulative percentage of 92.8% of respondents reaching at least a moderate knowledge level, indicating a foundational understanding of TB across the sample. However, the presence of respondents in both the high and low knowledge categories implies the need for nuanced educational approaches to address specific gaps while reinforcing strong baseline knowledge in the community.

Knowledge on TB Disease, Treatment and Prevention

On the Knowledge of TB disease in table 3, the data indicate high awareness among respondents regarding the fundamentals of tuberculosis (TB), with over half identifying correct responses for each item. For example, 88.9% correctly recognized that TB is a communicable disease spread through respiratory droplets, while 92.2% accurately identified common TB symptoms, such as persistent cough, fever, weight loss, and night sweats. Knowledge about TB transmission was also evident, with 88.4% correctly acknowledging that TB is airborne and spreads via respiratory droplets. Additionally, 95.3% correctly indicated that TB primarily affects the lungs, suggesting that the respondents are generally well-informed about the nature and symptoms of TB. However, a less robust understanding was noted in areas such as Mycobacterium tuberculosis's survival on surfaces, where only 56.1% recognized its limited durability on surfaces. Similarly, awareness of the bacterium responsible for TB was moderate, with only 63% identifying Mycobacterium tuberculosis correctly. These findings imply areas where public health education could improve understanding of TB biology.

Additionally, respondents displayed a sound understanding of TB treatment practices (table 3), especially regarding the importance of completing TB medication to avoid drug resistance (93.8% correct) and the use of antibiotics in treatment (88.6% correct). Awareness of the prolonged duration of TB treatment, typically lasting six months, was also high, with 87.1% selecting the correct answer. Furthermore, 81.9% knew that Directly Observed Therapy (DOT) is recommended to ensure treatment adherence, emphasizing the population's understanding of treatment protocols. In contrast, only 66.4% correctly recognized that TB is not primarily spread through contaminated food and water, revealing a gap in understanding regarding TB transmission routes. Additionally, knowledge about drug-resistant TB requiring different medication sets was identified correctly by 74.2%, suggesting room for increased education on the complexities of TB treatment resistance.

Moreover, the respondents demonstrated substantial knowledge of preventive measures for TB (table 3). For instance, 89.9% acknowledged that living in well-ventilated spaces reduces TB transmission risk, while 83.7% correctly indicated that TB primarily affects the lungs but can impact other organs as well. Moreover, a strong majority (92.8%) agreed that good personal hygiene contributes to TB prevention, and 84% understood the

necessity of treating latent TB infections as a preventive measure. However, there was some misunderstanding concerning the effectiveness of face masks in TB prevention, with 45.7% incorrectly believing they are ineffective. This highlights an area where misconceptions persist, as mask usage is indeed a critical preventive strategy. Furthermore, while 94.8% correctly associated regular exercise and a healthy diet with immune support against TB, only 64.3% recognized the heightened TB risk for individuals with HIV, pointing to an educational opportunity regarding TB's impact on immunocompromised populations.

Overall, the results reveal a generally well-informed respondent group regarding TB, with targeted areas for further education, particularly around transmission mechanisms, prevention through mask use, and the role of comorbidities such as HIV in increasing TB susceptibility.

Attitude towards TB Prevention and Control

Reflected in table 4 the Respondents' Attitudes Toward Tuberculosis Prevention and Control. The data indicate a positive and proactive attitude among respondents toward tuberculosis (TB) prevention and control, with an overall mean score of 3.63 (SD = 0.41), reflecting a consensus of strong agreement on the importance of TB management in their community. Respondents expressed the strongest agreement on the perception of TB as a serious public health concern, with a mean of 3.82 (SD = 0.47). This is closely followed by an empathetic stance toward those diagnosed with TB, with a mean of 3.75 (SD = 0.62), suggesting high levels of compassion and support for individuals affected by TB. Additionally, respondents displayed strong confidence in TB prevention measures, including vaccinations (mean = 3.66, SD = 0.59), and recognized the importance of regular screenings for high-risk groups (mean = 3.69, SD = 0.65). Awareness and community involvement were also highly rated, with 3.58 (SD = 0.72) of respondents willing to support awareness campaigns, and 3.64 (SD = 0.78) acknowledging the necessity of community engagement for effective TB control. Furthermore, a mean score of 3.6 (SD = 0.73) indicates a broad recognition of individual responsibility in preventing TB spread, emphasizing the community's collective role in managing the disease. Although respondents felt well-informed about TB prevention (mean = 3.36, SD = 0.87), this area had the highest standard deviation, indicating variability in perceived knowledge levels among participants. These findings suggest a foundation of positive attitudes and readiness to support TB control measures, alongside potential benefits from ongoing education to ensure all community members feel equally knowledgeable and empowered regarding TB prevention.

Practices on TB Treatment and Prevention

In terms of Practices of Participants on Tuberculosis Treatment and Prevention, the data table 5 revealed a high level of adherence to recommended behaviors for both treatment and prevention, with an overall mean of 3.65 (SD = 0.43) for treatment practices and 3.60 (SD = 0.49) for preventive practices, both categorized as “All the time.” In relation to TB treatment practices, participants consistently reported taking TB medication as prescribed, with a mean of 3.73 (SD = 0.64) for adherence to medication timing and a similarly high mean of 3.70 (SD = 0.71) for completing the entire course of treatment. This consistent adherence, coupled with regular follow-up appointments (mean = 3.56, SD = 0.79), reflects a strong commitment to the treatment regimen. Participants also took preventive steps during treatment, including practicing respiratory hygiene to prevent TB transmission to others (mean = 3.67, SD = 0.63) and informing close contacts about the need for screening (mean = 3.64, SD = 0.64). Social support-seeking was notably high (mean = 3.73, SD = 0.56), indicating that respondents actively engaged their support networks during treatment. Regarding TB prevention practices, participants demonstrated a strong commitment to preventive measures, such as encouraging family members to receive TB vaccinations (mean = 3.73, SD = 1.63) and consistently using face masks in crowded spaces (mean = 3.56, SD = 0.74). High means were also observed for practices such as maintaining good hand hygiene

(mean = 3.67, SD = 0.65) and creating well-ventilated environments (mean = 3.55, SD = 0.69), highlighting respondents' awareness of hygiene and environmental factors in preventing TB transmission. Furthermore, respondents took a proactive role in community efforts by participating in awareness campaigns (mean = 3.48, SD = 0.83) and supporting stigma reduction (mean = 3.59, SD = 0.74). Additionally, they practiced health behaviors such as balanced dieting and regular exercise (mean = 3.61, SD = 0.68) to build immunity.

Comparative Analysis of Knowledge Level on Tuberculosis According to Demographic Profile

Table 6 shows the analysis of knowledge levels on tuberculosis (TB) in terms of disease knowledge, treatment, and prevention reveals significant variations across demographic groups, particularly in relation to age and years of residency. In table 6, the analysis indicates that younger and middle-aged participants displayed generally higher knowledge levels. Participants aged 46 to 55 had the highest mean scores for disease knowledge (M = 8.48, SD = 1.17) and prevention (M = 8.48, SD = 1.17), while those aged 36 to 45 also scored relatively high across categories. Participants aged 19 to 25 showed strong knowledge on TB treatment (M = 8.41, SD = 1.37), with a p-value < 0.01, indicating statistical significance in knowledge variation by age. In contrast, respondents over 65 exhibited significantly lower knowledge scores (M = 5.33, SD = 2.96 for disease knowledge), suggesting a knowledge gap in older age groups. Meanwhile, no statistically significant differences were found between male and female respondents regarding TB knowledge levels, as p-values were greater than 0.05 across disease knowledge, treatment, and prevention categories. Both male (M = 8.04, SD = 1.72) and female respondents (M = 8.09, SD = 1.84) displayed similar knowledge levels, suggesting minimal gender-based differences in TB understanding within the sample. Additionally, educational attainment demonstrated a notable influence on knowledge, though not statistically significant (p > 0.05). Respondents with a diploma reported the highest knowledge scores (M = 10.00, SD = 0.00 for disease knowledge and prevention), indicating complete understanding. College graduates also scored highly across categories, while those with only a high school level of education exhibited lower mean scores (M = 6.50, SD = 0.71 for disease knowledge). On one hand, knowledge levels varied minimally by income, with no statistically significant differences observed across income groups. The majority of participants, particularly those earning below 10,000, demonstrated moderate to high knowledge scores across categories (M = 8.10, SD = 1.65 for disease knowledge). Those with higher income levels showed similar or slightly lower knowledge levels, indicating that income may have limited impact on TB knowledge. On the other hand, years of residency presented statistically significant differences in TB knowledge, with p-values < 0.01 across all categories. Individuals residing in the area for 1 to 10 years had the highest mean scores (M = 8.52, SD = 1.22 for disease knowledge), suggesting a positive correlation between moderate residency duration and higher TB knowledge. Conversely, respondents residing for over 40 years exhibited lower knowledge levels (M = 7.58, SD = 2.15), indicating that long-term residents may benefit from targeted TB education efforts. These findings suggest that age and years of residency are significant factors influencing TB knowledge levels, while education shows a non-significant but positive association with knowledge. Tailored educational initiatives focusing on older adults and long-term residents could help address identified knowledge gaps, potentially enhancing TB prevention and control within the community.

Comparative Analysis of Attitudes Toward Tuberculosis According to Demographic Profile

Table 7 shows the comparative analysis of attitudes toward tuberculosis (TB) across demographic profiles reveals significant variations by age and years of residency, though differences in sex and educational attainment are less marked. Participants' attitudes toward TB show significant variability based on age (p < 0.01). Individuals aged 46 to 55 displayed the highest positive attitude score (M = 3.74, SD = 0.21), indicating a strong commitment to TB prevention and treatment. Similarly, those aged 36 to 45 had high attitude scores (M = 3.69,

SD = 0.24). Conversely, respondents aged over 65 scored substantially lower (M = 3.18, SD = 1.02), suggesting a potentially less engaged or supportive view toward TB prevention efforts in older age groups. These findings imply that TB awareness and attitude improvement programs may need to target older adults to bridge attitudinal gaps. While no statistically significant differences in attitudes were observed between males and females (p = 0.172), females exhibited a slightly higher mean attitude score (M = 3.65, SD = 0.40) compared to males (M = 3.60, SD = 0.42). These results suggest generally similar levels of engagement and positive attitude toward TB prevention and treatment among both sexes. On one hand, educational attainment did not result in statistically significant differences in attitude (p = 0.061). However, respondents with college education or higher demonstrated slightly more positive attitudes, with college graduates scoring a mean of 3.71 (SD = 0.23) and those with a diploma scoring the highest at 3.90 (SD = 0.00). This trend suggests that higher educational levels may correlate with a greater awareness and more positive attitudes toward TB prevention. On the other hand, income levels showed no significant relationship with TB attitudes (p = 0.604). Although specific mean scores were not provided, this suggests that economic standing does not have a substantial impact on the community's attitudes toward TB prevention and control. Meanwhile, years of residency produced significant variations in TB attitudes ($p < 0.01$). Participants who had resided in the community for 1 to 10 years had the highest mean attitude score (M = 3.73, SD = 0.19), closely followed by those residing for 10 to 20 years (M = 3.71, SD = 0.26). However, those with residency exceeding 40 years showed a lower mean score (M = 3.51, SD = 0.54), suggesting that longer-term residents may be less proactive in their attitudes toward TB prevention.

Comparative Analysis of Treatment and Prevention Practices for Tuberculosis According to Demographic Profile

Table 8 shows the analysis of tuberculosis (TB) treatment and prevention practices across demographic profiles highlights significant differences by age, sex, and years of residency, while educational attainment and income levels show limited variation. Age showed a statistically significant impact on both treatment practices (p = 0.00) and prevention practices (p = 0.014). Individuals aged 46 to 55 demonstrated the highest mean score in both treatment (M = 3.74, SD = 0.26) and prevention practices (M = 3.73, SD = 0.27), indicating strong adherence to TB treatment regimens and preventive behaviors. Younger participants, specifically those aged 19 to 25, also displayed positive practices but at a slightly lower level (treatment M = 3.70, SD = 0.19; prevention M = 3.59, SD = 0.27). Notably, respondents over 65 scored the lowest across both practices (treatment M = 3.11, SD = 1.05; prevention M = 3.19, SD = 0.97), suggesting that older adults may require more targeted interventions to support TB treatment and prevention adherence. On one hand, Sex differences were statistically significant for treatment practices (p = 0.047) but not for prevention practices (p = 0.143). Female participants reported slightly higher mean scores for both treatment (M = 3.68, SD = 0.38) and prevention practices (M = 3.63, SD = 0.48) compared to males (treatment M = 3.60, SD = 0.48; prevention M = 3.56, SD = 0.50). This pattern suggests that women might be more consistent in their TB-related health practices, particularly in treatment adherence. On the other hand, educational attainment did not yield statistically significant differences for treatment (p = 0.392) or prevention practices (p = 0.616). However, participants with a college education showed slightly higher adherence scores (college graduate treatment M = 3.71, SD = 0.25; prevention M = 3.65, SD = 0.32). This trend implies that higher educational levels may correlate with a better understanding of TB treatment and prevention protocols, though the differences were not large enough to reach statistical significance. Meanwhile, Income levels did not significantly affect treatment (p = 0.678) or prevention practices (p = 0.564). Respondents with lower income (below 10,000) demonstrated consistent scores in treatment (M = 3.65, SD = 0.39) and prevention practices (M = 3.61, SD = 0.45). These findings suggest that TB treatment and

prevention practices are uniformly adhered to across income levels, likely due to universal access to treatment resources or community support structures. Additionally, Years of residency significantly influenced both treatment ($p < 0.01$) and prevention practices ($p = 0.040$). Those with 1 to 10 years of residency had the highest scores in treatment ($M = 3.74$, $SD = 0.21$) and prevention practices ($M = 3.69$, $SD = 0.24$). In contrast, participants with more than 40 years of residency scored lower in both categories (treatment $M = 3.51$, $SD = 0.58$; prevention $M = 3.48$, $SD = 0.68$). This suggests that individuals who have resided longer in the community may benefit from renewed education on TB prevention and treatment practices, while recent residents appear more engaged in proactive TB practices.

DISCUSSION

An effective response to tuberculosis (TB) requires a comprehensive understanding of community knowledge, attitudes, and practices. The study reveals that respondents possess a moderate understanding of tuberculosis (TB), yet their knowledge of key aspects remains insufficient. While they generally recognize TB transmission through respiratory droplets and identify common symptoms such as persistent cough and fever, significant knowledge gaps persist. Misunderstandings regarding TB transmission routes, the survival of Mycobacterium tuberculosis on surfaces, and the increased risks for immunocompromised individuals, including those living with HIV, are prevalent. These findings align with previous research that highlights similar challenges in TB knowledge across diverse populations. For example, while a study indicated that outpatients in some regions had good knowledge, attitudes, and practices toward TB [11], others demonstrated more limited understanding. A considerable number of individuals had heard of TB and acknowledged its treatability, yet only a small fraction accurately identified bacteria as the causative agent [10]. Furthermore, less than half of the respondents in another study demonstrated accurate knowledge about TB transmission and related misconceptions [3].

Despite a high awareness rate, a significant portion of participants struggled to recognize bacteria or germs as the primary cause of TB, as evidenced by findings where only 20.2% could accurately identify the bacterial nature of the disease [17]. In contrast, some populations exhibit better knowledge regarding TB prevention, as evidenced by research indicating that respondents generally have good knowledge across all aspects of tuberculosis prevention, including controlling the source of TB, enhancing body immunity, and overall preventive practices [13]. However, it is concerning that only 34% of respondents recognized TB as a bacterial infection (Nigatu & Moreda, 2018). Together, these results emphasize the necessity of enhancing public health education, particularly focusing on TB etiology, transmission, and prevention practices [6]. This highlights the urgency for targeted educational interventions to improve community knowledge about TB, especially in recognizing its transmission routes and associated risks, which are critical for effective disease control and prevention.

The findings also indicate that respondents generally possess positive attitudes and actively engage in tuberculosis (TB) prevention and control efforts, demonstrating confidence in preventive measures such as vaccinations and regular screenings. Additionally, they exhibit empathy for those affected by TB and express a willingness to participate in community awareness initiatives. However, the variability in perceived knowledge levels underscores the need for sustained educational outreach to ensure a comprehensive understanding within the community. This aligns with research showing that, although communities are aware of TB, there is still a need to reinforce attitudes and preventive practices [12]. Supporting literature illustrates a similar trend in knowledge and attitudes toward TB. While many participants are aware of the disease, only a small fraction demonstrate a thorough understanding, indicating a significant gap in knowledge. This highlights the importance of improving community literacy about TB to reduce stigma and enhance health-seeking behaviors,

ultimately leading to better prevention and treatment outcomes [16]. Negative attitudes toward TB prevention often arise from infrequent routine check-ups, limited use of protective masks, and emotional factors affecting TB patients (Am, 2022).

Furthermore, increased public knowledge, driven by education, correlates with proactive TB prevention behaviors within the community. The study revealed a high level of TB awareness among respondents, accompanied by positive attitudes and moderate self-preventive care, with TB patients feeling more comfortable interacting with family than with friends or neighbors [21]. In a broader context, while overall knowledge about TB was assessed as fair, attitudes and practices were similarly rated as satisfactory (Al Khalili et al., 2022). Despite these positive indicators, there is a clear need to focus on educating individuals from non-healthcare fields about TB transmission, treatment options, and the critical role of masks in preventing disease spread [1]. These findings emphasize the importance of targeted educational interventions to bridge knowledge gaps and promote effective TB prevention strategies within communities.

The comparative analysis of tuberculosis (TB) knowledge highlights a concerning trend: younger and middle-aged participants possess a significantly greater understanding of the disease compared to older respondents, particularly those over 65, who exhibit considerable knowledge gaps. This disparity in knowledge emphasizes the need for targeted educational initiatives aimed at older populations to bridge these gaps. While some studies, such as those by Kiswaluyo et al. (2023), indicate no significant relationship between age and medical knowledge regarding TB in certain communities, other research suggests that knowledge levels can vary widely with age. For instance, a study [3] found that knowledge was generally higher among older individuals, indicating that contextual factors may influence these outcomes. Conversely, a study [25] revealed that factors such as age were significantly associated with higher levels of TB knowledge. These findings suggest that while younger individuals may currently have an advantage in understanding TB, interventions that consider these influencing factors could enhance knowledge among older adults.

Nonetheless, it's essential to recognize that there is often a correlation between lower knowledge of TB and decreased socioeconomic and educational status [9]. Thus, while focusing on older adults is important, it is equally vital to tackle the wider socioeconomic and educational inequalities that contribute to the lack of TB awareness.

Furthermore, the analysis highlights that age and duration of residency significantly impact TB knowledge. Previous research demonstrates that improved knowledge correlates with better housing conditions and educational levels, emphasizing the importance of tailored educational interventions for older adults and long-term residents to address these gaps [5]. In terms of attitudes and practices, middle-aged individuals display the most positive attitudes and adherence to treatment protocols, reflecting a broader trend where positive health-seeking behaviors are linked to higher educational attainment and enhanced knowledge about TB [14]. On the other hand, older respondents exhibit lower engagement levels, indicating a pressing need for targeted outreach and educational efforts to boost their involvement in TB management [21].

While the study finds no significant gender differences in overall knowledge levels, female respondents demonstrate slightly more favorable attitudes and greater adherence to treatment practices than their male counterparts. This supports a study [19] which reported that females generally have better awareness of TB, although they were less likely to possess a high level of knowledge compared to males. Consequently, other research findings also revealed that while participants exhibited a moderate understanding and attitude toward tuberculosis (TB), females demonstrated significantly better TB-related practices compared to males, despite males having slightly higher knowledge levels [2; 25]. On the other hand, Al Khalili et al. (2022) found that

female respondents exhibited higher knowledge levels while males demonstrated better attitudes and practices (Al Khalili et al., 2022).

Additionally, respondents with moderate years of residency show proactive attitudes and stronger adherence, while long-term residents exhibit lower engagement. This disparity highlights the need for tailored interventions that address the specific challenges faced by older adults and long-term residents, as these groups may require additional support and education regarding TB prevention and management [29]. Ultimately, these findings emphasize the critical importance of enhancing both knowledge and attitudes toward TB across diverse demographic groups to foster community engagement in effective TB prevention and control strategies [15].

CONCLUSION

Addressing tuberculosis (TB) effectively requires a nuanced understanding of community knowledge, attitudes, and practices. While respondents generally exhibit a moderate awareness on TB, significant knowledge gaps persist, particularly among older adults and long-term residents. Educational initiatives tailored to these groups are essential to improve understanding and empower individuals in preventive behaviors. Furthermore, fostering proactive attitudes and ensuring adherence to treatment can enhance community efforts in TB management, ultimately contributing to better public health outcomes.

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